CLAIMS

What is claimed is:

1. A method for fabricating a write head, the method comprising:

laying an endpoint on a magnetic flux guide, the endpoint being resistant to milling;

laying a sacrificial edge taper on the flux guide, the sacrificial edge taper having layers of different materials that have different milling rates;

milling the sacrificial edge taper such that the different materials mill at different rates to create a desired angle for a negative mold; and

filling the negative mold with a magnetic material to form a final edge taper for guiding flux to a write pole near the edge taper.

2. The method of claim 1, further comprising:

laying a P3 layer against the final edge taper, the P3 layer comprising a yoke joined to a write pole tip at a flare point, the write pole tip having a tip end that abuts an air bearing surface (ABS) of a disk, wherein a distance from the ABS to the flare point is the same as a combined thickness of the yoke and the final edge taper.

3. The method of claim 1, wherein the milling is ion milling.

4. The method of claim 3, wherein the endpoint resists ion milling.

5. The method of claim 4, wherein the endpoint comprises a material from a group including rhodium, ruthenium, nickel chromium and copper.

6. The method of claim 1, wherein the edge taper is a leading edge taper.

7. The method of claim 1, further comprising:

layering a trailing edge taper (TET) on a trailing endpoint layer, the trailing endpoint adjacent the write pole; and

milling away the TET to create a taper point.

8. The method of claim 7, wherein the trailing endpoint layer comprises layers of different materials that have different milling rates, thus producing a controlled tapered shape.

9. The method of claim 8, wherein the taper point is between 40° and 50°.

10. The method of claim 8, wherein the trailing endpoint layer comprises a material from a group including rhodium, ruthenium, nickel chromium and copper.

11. A write head in a hard disk drive, the write head being suitable for perpendicular recording, the write head comprising:

a write pole abutting a yoke at a flare point;

an edge taper adjacent the yoke, the edge taper tapering to the flare point, the edge taper being capable of shaping a flux field, the edge taper being formed by milling away different layers of a sacrificial edge taper to create a negative mold

an endpoint adjacent the edge taper, the endpoint being transparent to the flux field;

a magnetic flux guide adjacent the endpoint, the flux guide being capable of guiding magnetic flux to the edge taper; and

a magnetic flux source adjacent the magnetic flux guide, wherein a flux is shaped by the edge taper that is far enough away from an air bearing surface (ABS) adjacent the write pole to avoid remanence and adjacent track interference, while still providing adequate flux strength to the write pole for perpendicular recording on a disk in a hard disk drive.

12. The write head of claim 11, wherein the negative mold has a taper point between 40° and 50°.

13. The write head of claim 11, wherein the edge taper is a leading edge taper.

14. The write head of claim 11, wherein the endpoint comprises a material from a group including rhodium, ruthenium, nickel chromium and copper.

15. The write head of claim 11, wherein the edge taper is a trailing edge taper (TET).

16. The write head of claim 15, wherein the endpoint is a trailing endpoint layer comprising a material from a group including rhodium, ruthenium, nickel chromium and copper.

17. A hard disk drive having a write head suitable for perpendicular recording, the write head comprising:

a write pole abutting a yoke at a flare point;

an edge taper adjacent the yoke, the edge taper tapering to the flare point, the edge taper being capable of shaping a flux field, the edge taper being formed by milling away different layers of a sacrificial edge taper to create a negative mold;

an endpoint adjacent the edge taper, the endpoint being transparent to the flux field;

a magnetic flux guide adjacent the endpoint, the flux guide being capable of guiding magnetic flux to the edge taper; and

a magnetic flux source adjacent the magnetic flux guide, wherein a flux is shaped by the edge taper that is far enough away from an air bearing surface (ABS) adjacent the write pole to avoid remanence and adjacent track interference, while still providing adequate flux strength to the write pole for perpendicular recording on a disk in a hard disk drive.

18. The hard drive of claim 17, wherein the negative mold has a taper point between 40° and 50°.

19. The hard drive of claim 17, wherein the edge taper is a leading edge taper.

20. The hard drive of claim 17, wherein the endpoint comprises a material from a group including rhodium, ruthenium, nickel chromium and copper.

21. The hard drive of claim 17, wherein the edge taper is a trailing edge taper.

22. The hard drive of claim 21, wherein the endpoint comprises a material from a group including rhodium, ruthenium, nickel chromium and copper.

23. A method of fabricating a write pole, the method comprising:

incorporating trailing edge taper (TET) material and an endpoint layer into a P3 write pole;

ion milling the P3 write pole to define both the P3 write pole and a TET;

encapsulating the P3 write pole;

providing a planar surface on the P3 write pole using a chemical and mechanical polishing (CMP) process;

tapering the P3 write pole and TET with a combination of resist and ion milling; and

terminating the ion milling when the endpoint layer is exposed during milling, whereby a tapered structure of the P3 write pole is achieved.